

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

REC'D 09 NOV 2005  
WIPO PCT  
PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1.)

|   |  |   |
|---|--|---|
|   |  | Date of mailing<br>(day/month/year) see form PCT/ISA/210 (second sheet) |
| Applicant's or agent's file reference<br>see form PCT/ISA/220                                 |  | <b>FOR FURTHER ACTION</b><br>See paragraph 2 below                      |
| International application No.<br>PCT/IB2005/000050  | International filing date (day/month/year)<br>12.01.2005 | Priority date (day/month/year)<br>13.01.2004                            |
| International Patent Classification (IPC) or both national classification and IPC<br>H01M8/04 |  |   |
| Applicant<br>TOYOTA JIDOSHA KABUSHIKI KAISHA  |  |   |

### 1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for International preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

|  |   |
|--|---|
| Name and mailing address of the ISA:   | Authorized Officer                            |
| <br>European Patent Office - P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk - Pays Bas<br>Tel. +31 70 340 - 2040 Tx: 31 651 epo nl<br>Fax: +31 70 340 - 3016 | Standaert, F<br>Telephone No. +31 70 340-4608 |



WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/IB2005/000050

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. **type of material:**
    - a sequence listing
    - table(s) related to the sequence listing
  - b. **format of material:**
    - in written format
    - in computer readable form
  - c. **time of filing/furnishing:**
    - contained in the international application as filed.
    - filed together with the international application in computer readable form.
    - furnished subsequently to this Authority for the purposes of search.
3.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. **Additional comments:**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/000050

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or  
industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |             |            |
|-------------------------------|-------------|------------|
| Novelty (N)                   | Yes: Claims | 4,9        |
|                               | No: Claims  | 1-3,5-8,10 |
| Inventive step (IS)           | Yes: Claims |            |
|                               | No: Claims  | 1-10       |
| Industrial applicability (IA) | Yes: Claims | 1-10       |
|                               | No: Claims  |            |

**2. Citations and explanations**

**see separate sheet**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.  
**PCT/IB2005/000050**

**Re Item V.**

**1. Reference is made to the following documents:**

D1 : FR 2 831 994 A (L'AIR LIQUIDE SOCIETE ANONYME POUR L'ETUDE ET  
L'EXPLOITATION DES PROCE) 9 May 2003  
D2 : US 2003/022041 A1 (BARTON RUSSELL HOWARD ET AL) 30 January 2003  
D3 : EP 1 187 241 A (NISSAN MOTOR CO., LTD) 13 March 2002  
D4 : PATENT ABSTRACTS OF JAPAN vol. 2003, no. 12, 5 December 2003 &; JP  
2003 317752 A (NISSAN MOTOR CO LTD), 7 November 2003

**2. LACK OF NOVELTY**

**2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.**  
Document D1 discloses (the references in parentheses applying to this document):

A fuel cell system characterized by comprising:  
a fuel cell that receives a supply of fuel gas including hydrogen for generating electric power;  
a fuel off-gas passage that is a passage for discharging fuel off-gas from the fuel cell;  
a discharging mechanism that discharges the fuel off-gas from the fuel off-gas passage to outside (see Figure 1 and page 7, line 7-32);  
a nitrogen concentration estimation mechanism for estimating a nitrogen concentration of the fuel gas in the fuel cell (see page 2, line 16 - page 3, line 11);  
and  
a discharge amount control mechanism for controlling an amount of discharged fuel off-gas that is discharged by the discharging mechanism depending on the nitrogen concentration estimated by the nitrogen concentration estimation mechanism (page 3, line 7-11);  
characterized in that the nitrogen concentration estimation mechanism estimates the nitrogen concentration from a rate of pressure drop in the fuel off-gas passage during discharge of the fuel off-gas by the discharging mechanism (page 2, line 32 - page 3, line 6).

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Therefore the subject-matter of **claims 1-3** is not new.

- 2.2 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent **claim 10**, which therefore is also considered not new.
- 2.3 The subject-matter of dependent **claims 5-8** is not new in the sense of Article 33(2) PCT for the reason that the subject-matter of said claims, in combination with the features of any claim to which they refer, is directly derivable from one of the documents D1, D2, D3 or D4:

For claim 5, see Figure 1 in D1;

For claim 6, see D2, step 204 and 206 in Figure 10A

For claim 7, see D2, paragraphs [0013] and [0014]

or D3, paragraphs [0039] and [0040]

or D4;

For claim 8, see D2, paragraph [0087];

**3. LACK OF INVENTIVE STEP**

The subject-matter of dependent **claims 4 and 9** represents simple design details which are generally known to the person skilled in the field of fuel cells. For instance, claim 4 is evident in the case where the anode will be purged with nitrogen during shut-down of the fuel cell system. Claim 9 represents the conservation law for mass of a steady-state flow, which is a general and basic modelling principle for every flow chart. Therefore claim 4 and 9 do not involve an inventive step in the sense of Article 33(3) PCT.